

REMARKS

Attorney for applicant thanks Examiner Therhorn for his assistance in the preparation of this amendment. Attorney for applicant submitted amended claim 1 to Examiner for review. Following such review, attorney for applicant and Examiner agreed that the insertion of the phrase "including a mechanical switching structure" in claim 1 rendered the claim allowable over the prior art of record. Such phrase now appears in amended claims 4, 26, 27, 29 and 36 as well.

On the advice of Examiner, to expedite the prosecution of this application, applicant files this amendment after Final Action with an accompanying RCE.

Claims 1-5, 7, 16-20, 26-27, 29-31, and 36-38 have been rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over either Moon (U.S. Patent No. 6,245,227) or Ramsey I (U.S. Patent No. 6,033,546).

The claims as noted above are considered to read on either Moon or Ramsey I. The Office Action goes on to say that if a difference exists between the claims and either Moon or Ramsey I, it would reside in optimizing the elements of either Moon or Ramsey I. The Office Action then states that it would have been obvious to optimize the elements of either Moon or Ramsey I to enhance separation.

Claims 1-5, 7, 16-20, 26, 27, 29-31, and 36-38 are also rejected under 35 U.S.C. §103(a) as being unpatentable over either Moon or Ramsey I in view of Ramsey II (U.S. Patent No. 6,110,643) and Parce (U.S. Patent No. 6,012,902). The claims as noted above are considered by Examiner to differ "at best" from either Moon or Ramsey I in reciting use of pressure driven flow. The Office Action goes on to say that Ramsey II discloses that a hydraulic force is an alternative to use of an electrically driven force in delivering fluids through the channels of a micro chip (column 1, lines 10-18). The Office Action then cites Parce (column 3, lines 6-32) for the proposition that use of a micropump to generate a flow is useful where pressure based flow is particularly desirable, where electric fields are prohibited, and where materials are not easily or predictably transported by electrokinetic flow. Finally the Examiner states that it would have been obvious to use pressure driven flow in either Moon or Ramsey I because Ramsey II discloses that a hydraulic force is an alternative to use of an electrically driven force in delivering fluids through the channels of a micro chip and because Parce discloses that use of a micropump to

generate flow is useful where pressure based flow is particularly desirable, where electric fields are prohibited, and where materials are not easily or predictably transported by electrokinetic flow.

Anticipation of a claimed invention by a prior art reference under 35 U.S.C. §102 requires the presence in a single prior art reference of each and every element of a claimed invention. Applicants respectfully submit that the Moon fails to disclose each and every element of applicant's devices as presently claimed.

To establish a *prima facie* case of obviousness under 35 USC 103(a), the Examiner must present a prior art reference which, when modified, teaches or suggests all the claim limitations. There must be some suggestion or motivation, either in the reference itself or in the reference providing the suggested modification, to modify the reference in order to teach or suggest all the claim limitations. In addition, there must be a reasonable likelihood of success, viewed in the light of the prior art. Here the Examiner is relying upon the Moon reference, in combination with Ramsey I. Based upon the foregoing requirements, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness.

Independent Claims 1, 26, 27, 29, and 36, all require that the microfluidic device have a gradient-generation means for generating a gradient of a selected mobile-phase component in a mobile phase or a mobile-phase source that provides a mobile phase that exhibits a gradient of a selected mobile-phase. Further, the structure associated with the generation of a gradient by pressure driven flow is a "mechanical switching structure". This feature of the invention, added to the above noted claims by amendment, is neither taught nor suggested by Moon, for the reasons detailed below.

The Examiner needs look no further then applicant's specification to understand the difference between applicant's invention and that of Moon. On page 13, lines 3-7, it is recited that applicant employs a switching plate 60 as an integrated means for sample introduction. The switching plate also serves to provide controllable communication between the mobile-phase holding conduit **21**, the sample introduction conduit **67**, and the separation conduit **19**.

Examiner notes that Applicant's prior remarks urged that Moon does not disclose gradient generation means. However Examiner maintains that gradient generation means is considered to be disclosed in Moon, and cites column 31, lines 27-35 as disclosing the provision of two additional reservoirs to produce gradient elution. While not conceding its

position, Applicant has amended the claims to recite a “mechanical switching structure” as an element of its gradient generating means. Such recitation distinguishes applicant’s invention as presently claimed, over the prior art of record, whether such art is considered singly or in combination.

Examiner characterized applicant’s prior remarks as urging that Moon’s pumping is electrokinetic pumping and not pressure driven flow. Examiner argues that pressure driven flow, as previously claimed, would read on electrokinetic pumping, i.e., the phrase “pressure driven flow” reads on the pressure that is created by voltage differences. The introduction of a “mechanical switching structure” into the claims as an element of applicant’s gradient generating means clearly differentiates between the electrokinetic pumping of Moon and the mechanically driven pumping apparatus of applicant’s invention.

Examiner has responded to applicant’s prior arguments relating to dependent claims by arguing that a cover is not disclosed by Moon by citing column 25, lines 14-16 of Moon, that multiple inlets appear in Moon; and that the use of mixing conduits, while not appearing in Ramsey I, also does not appear in the claims. Applicant responds to arguments relating to dependent claims by amending the independent claims that such claims depend from to recite mechanical structure associated with gradient generating means that is neither shown nor suggested by the prior art cited.

Examiner’s response to applicant’s discussion of pressure driven flow cites the use of hydraulic force set forth in Ramsey II and the use of a micropump to generate flow in Parce. Finally the Examiner states that it would have been obvious to use pressure driven flow in either Moon or Ramsey I because Ramsey II discloses that a hydraulic force is an alternative to use of an electrically driven force in delivering fluids through the channels of a micro chip and because Parce discloses that use of a micropump to generate a flow is useful where pressure based flow is particularly desirable, where electric fields are prohibited, and where materials are not easily or predictably transported by electrokinetic flow.

Because neither Ramsey II nor Parce discloses the mechanical structure of a gradient generation means as presently claimed by applicants in its newly presented amended claims, Applicants submit that the invention is patentable under 35 U.S.C. §103(a) when considered against such references whether singly or in combination with the Moon and Ramsey I references and respectfully request reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection as stated above.

Claims 6 and 8-15 were withdrawn from consideration as being drawn to a non-elected species. While §803.02 of the MPEP provides that the Examiner may require a provisional election of a single species prior to examination on the merits, and that such provisional election will be given effect *in the event* that the genus claim should be found not allowable, applicants have placed the claims in allowable form. There is no prior art that anticipates or renders obvious the elected species, and the search of the genus claim should be extended.

SUMMARY

Attorney for applicant has conferred with Examiner, amended the claims along the lines that Examiner and attorney for applicant have agreed upon, and has presented the above arguments for the purpose of advancing the prosecution of the subject application and facilitating allowance of the claims. A sincere effort has been made to place this application in condition for allowance. An early notice of allowance is earnestly requested.

If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned at (650) 330-0900.

Respectfully submitted,

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